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ABSTRACT

The purpose of this study was to collect data on behavior, including educational media usage, in a wide range of educational settings through use of participant observation. Eight special education teachers and their classrooms were used. An instrument adapted from the OSTRAQ system was used to measure 12 categories of pupil-teacher interaction including media resources usage. The results of the study suggest contrasting patterns of teacher-pupil interaction. The discussion of findings includes descriptions of classroom conditions, instructional situations, and analysis of effectiveness of the instrument and of participant observation as a data-gathering technique for this type of study. (Author)

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SPECIAL REPORT No. 746
COMPUTER-BASED PROJECT for the EVALUATION of MEDIA for the HANDICAPPED

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BACKGROUND

The Computer Based Project for the Evaluation of Media for the Handicapped, based on contract #OEC-9-423617-4357 (616) between the Syracuse (N.Y.) City School District and the Media Services and Captioned Films Branch, Bureau of Education for the Handicapped (United States Office of Education) for the five year period July 1, 1969 through June 30, 1974. The major goal is to improve the instruction of handicapped children through the development and use of an evaluation system to measure the instructional effectiveness of films and other materials with educable mentally handicapped (EMH) children, in-service training and media support for special teachers, and studies related to the evaluation process and the populations used.

The Project has concentrated on the 600 films and 200 filmstrips from the Media Services and Captioned Films (BEH - USOE) depository; however, specific packages from Project LIFE, various elementary math curricula, and selected programs from Children's TV Workshop have also been evaluated. The evaluation model used requires that: 1) objectives of materials be specified and written; 2) instruments be constructed to test and measure effectiveness; and, 3) children be the major sources of evaluation information. A number of instruments and methodologies are employed in the gathering of cognitive and affective data from 900 EMH children and 80 special teachers to make the effectiveness decisions. Over half of the EMH population can neither read or write; therefore, a unique Student Response System (SRS) is employed, consisting of a twenty station G.E.-1000 SRS which can be operated in a group or individual recording mode and is connected to a remote computer system. The computer capabilities consist of remote telephone connections to the Rome (N.Y.) Air Development Command, the Honeywell time-shared network, and the Schenectady (N.Y.) G E Research and Development Center; and batch mode capabilities of the Syracuse City Schools, Syracuse University, and various commercial sources.

In-service and media support activities provide on-the-job training for teachers, teacher aides, equipment, and materials to the special teachers in the city schools. The research activities have centered around investigations and special problems related to the development of the evaluation model. The four major areas considered are: 1) testing effects, 2) captioning effects, 3) special student characteristics; and, 4) evaluation procedures validation.

Documentation of the major activities appear in the five annual reports and the 600 evaluations prepared on materials used. Staff members were encouraged to prepare special reports and the attached paper is one of these. The opinions expressed in this publication do not necessarily reflect the position or policy of the Computer Based Project, the United States Office of Education, or the Syracuse City School District, and no official endorsement by any of the agencies should be inferred.

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Interaction Analysis

Interaction analysis systems are methods designed for collecting data about behaviors within a classroom or some analogous situation. Such systems are, for the most part, descriptive both in procedure and purpose, the basic task one of observing teacher and/or student interactions and recording them in scorable form. The development of such process measures represents a shift away from research and evaluation obsessed with outcomes. Prior to the 1960's, nearly all research on effective teaching was directed toward finding links between characteristics of teachers or of instructional settings and various kinds of pupil growth. Interaction analysis focuses on what teachers and students do, as opposed to what they have.

Though relatively new as an evaluation technique, interaction analysis has generated considerable interest and a proliferation of instruments. Rosenshine and Furst (1973) have analyzed over one hundred systems presently available for quantifying events during classroom instruction and found in them three elements which distinguish the various instruments: the recording procedure, the scope and specificity of items, and the shorthand or format used to code events. Among instruments differing in recording procedures are those systems in which an event is recorded each time it occurs and those in which

the frequency of a specified event for a given observational session is estimated on a low-high linear scale. The frequency of the coding tallies is usually dependent upon a change in what is occurring, but some systems record a time sense by tallying the interaction at a pre-specified rate (as in the case of the Flanders system in which behavior is recorded at three-second intervals). Items appearing in various instruments differ both in content emphasis and in degree of inference required to categorize an event. Some systems focus on affective components of a classroom, an observer coding behaviors with which a teacher reacts to the feelings, ideas, and activities of a student. Cognitive systems of interaction analysis deal with such issues as the kinds of information presented, teacher questions, or pupil responses. Some instruments emphasize low-inference, behaviorally specific items; other systems use high-inference categorizations, directing an observer to interpret behavior as "receptive" or "harsh." Some systems, notably Flanders and derivatives, categorize only verbal interactions between teacher and student, while others include or emphasize nonverbal events. Finally, there are formal differences among the system. Rosenshine (1970) has analyzed category systems and found most to be one-factor systems with each behavior coded in terms of frequency. In the last five years, however, multiple coding methods have been developed in which each event is coded two or more ways on such variables as activity, communication intent, and instructional objective (Rosenshine and Furst, 1973).

The uses of interaction systems are as varied as the instruments. One purpose is the description of classroom practices and the identification of effective instructional behavior. The use of observation instruments provides for the educational theorist a way of discerning teaching patterns in existing classes and formulating models of effective teaching, after learning which teacher behaviors correlate most highly with pupil outcomes. Rosenshine and Furst have explored literature directly concerned with the uses of interaction systems for research into the relationships between classroom activities and student growth. In addition to research, interaction analysis is used in teacher training. Charles (1972) advocates indirect teaching approaches (vs. directive or dominative) and uses the Flanders system to instruct teacher trainees in indirect verbal behaviors. Simon and Boyer advocate use of descriptors associated with effective teaching procedures for behavior to be acquired. And finally, Medley and Mitzel (1963) discuss the use of direct observation for the monitoring of instruction to assess, for example, whether the intentions of a program developer are being implemented.

As mentioned before, the various interaction systems differ in both content and form. The OSTRAQ system (or instrument) selected and adapted for the purposes of this study is a relatively simple system for analyzing of verbal interaction between teachers and students. The categories of the OSTRAQ system include: silence or confusion (O), student talk (S), and teacher talk -- telling (T), rejecting (R), accepting (A), and questioning (Q). The system is used to assess

teacher behavior as being direct or indirect, and a ratio of indirectness to directness in teaching is obtained by calculation and manipulation of frequencies. The instrument and procedures have been modified to study teacher-pupil interactions involving use of individualized media resources. A participant observation study completed previously in the same setting raised important questions:

> In considering the interactions that take place around these machines, it is tempting to assume that most, if not all the variables involved, concern the student and the machine. In fact many other variables come in to play including the classroom environment, inter-actions with non-using students, and -- perhaps most importantly -- the teacher. The ways in which such media are defined and used are very much dependent upon the way in which teachers define these media.
>
> (Bogdan et al., #2, p.69)

Specific conclusions of the participation study have been used as hypotheses for further investigation through structured observation.

Problem

In 1972 the Computer Based Project for the Evaluation of Media for the Handicapped, funded by the United States Office of Education, Bureau of Education for the Handicapped, and under contract with the Syracuse City School District, Department of Special Education, committed staff and funds to a program for evaluating in-classroom use of media. The program was called Experimental Classroom (XC) and described in the 1972-73 Project Proposal as an effort "to operationalize the careful study of educational media in varying classroom settings under varying conditions". It was anticipated that such study would provide data for analysis of media in a wide range of situations, as compared with the

CBP system of testing media in isolation from the impact of miscellaneous components of the classroom environment or of student-teacher interaction. The Project had developed specific evaluative methods tied to student response to media; however, little information existed on the internal or situational boundary conditions that affect media use or adoption.

Eight special education teachers and their respective classes were selected for the project, and CBP staff developed a loosely structured plan of assistance and support in the form of equipment and materials, teacher aids, and consultative help. To study XC activities throughout 1972-73, CBP contracted with Dr. Robert Bogdan, Center on Human Policy, Syracuse University for the organization, training, and direction of a participant observation team. Specific questions were formulated as focus for the XC research:

1. Under what general conditions do teachers select and use media?
2. Are there teaching styles that promote and reinforce media use and production?
3. Are there optimal teacher-child matches and mis-matches vis-a-vis media usage?
4. Under what conditions do teachers and children increase and decrease interest and effectiveness in utilization of media?
5. Can educational environments be so described as to ground promising hypotheses related to educational media?

The procedures and conclusions of the participant observation effort are critical to an understanding of the course of the XC program and to the nature of continued in-classroom efforts this year under the name Demonstration Classroom. The proposed plans for XC involvement underwent a series of modifications frustrating to both teachers and CBP

staff, and the focus of participation efforts shifted from one of investigating media use in the classroom to one of investigating the relationship between CBP and the teachers. Thus some investigation was made concerning behaviors involving media use in the classroom; however, the emphasis of observation as represented in the reports submitted to CBP became increasingly concerned with attitudes of teachers and teacher aids toward the Project. Much of the detail stated in the summaries is interview data. Teachers are reported as saying this or that in response to an observer's questions. Without systematic and sustained focus on classroom behaviors involving uses of media in the classroom, it is difficult to assess with any accuracy teacher-pupil behaviors with respect to media and to account for differences between a teacher's classroom behaviors as observed and a teacher's attitude as expressed in interview.

Despite limitations, the participant observation study did supply valuable descriptive material on classroom events; and while one must be cautious in interpreting conclusions which, in the final reports, were stated as support for teacher-stated attitudes, the conclusions concerning teacher-pupil behavior with respect to media merit additional study.

During the 1973-74 school year, CBP has continued to supply materials and assistance to the eight participating teachers, all of whom elected to remain with the program. CBP is continuing its study of the uses of media in the classroom, guided by the above-cited research questions of the Proposal. One question (2) is concerned with whether

there are teaching styles that promote and reinforce media use, and it is this question which is the basis for the present study. Participant observation conclusions relevant to the issue are sited below:

> In general, class studies were group oriented; media use was considered a group activity. (Bogdan et al., #2, p.57)
>
> Teachers seemed threatened....teachers might refuse to relinquish control of equipment of media to a child (#1, p.11)
>
> Teachers....perceive that every such device and program that individualizes instruction needs almost constant teacher supervision so that the child uses it properly. (#1, p.14)
>
> Individualized media resources find their most frequent use during "free time" periods (#2, p.73)
>
> Most teachers have rules a inst touching equipment, and enforcing those rules is one more element of control the teachers most worry about. (#1, p.11)
>
> Given the opportunity to manipulate mediating devices some children use it to sabotage the devices. (#2, p.77)

Instrument and Procedures

To study pupil-teacher interactions involving uses of individualized madia resources (defined for purposes of this study as equipment and materials supplied to teachers by CBP), an instrument was adapted from the OSTRAQ system. Behaviors were categorized as follows:

- 0: No media use
- S_1: Student request to use media; student initiated approach to media
- S_2: Student talk re use/content of media/materials
- T_1: Telling (directing) of student(s) to use a given device/material; expression of attitude re equipment
- T_2: Supervision of media use
- R_1: Rejection of student request to use media
- R_2: Criticism of student's use of media, activity

A_1: Acceptance of student's expressions, feelings re media (likes, dislikes)
A_2: Acceptance of initiative on part of student to use media/material
A_3: Praise or encouragement of student efforts in working with media

Q_1: Questions encouraging of media use...."Who would like to use....," etc.
Q_2: Questions re content/media use...."What did you see, hear, do?"

Use of the instrument involved one observer's recording of the identified behaviors in the classroom as they occurred. Upon entering a classroom, the observer noted the room arrangement (variable in these classrooms from one day to the next), the individualized media resources in evidence, the number of students present, the presence or absence of a teacher aide, and the group instructional activity in process, if any. Observation sessions averaged 1.3 hours. No attempt was made -- nor is it part of the OSTRAQ system -- to record behaviors against a set time schedule. In classes where several activities were observed simultaneously, the multiple behaviors were recorded for a simple frequency measure.

Results

During the observation study, three classes were observed: one class four times, one class three times, and one class once. Summaries of interactions involving individualized media use are recorded below:

School (A), Teacher (K)

Observation (1): 5-8, 9:00-11:05

> Assembly, then reading groups; students have dittoed work packets. One teacher aide, 14 students. Media in evidence: language master, EFI card reader, overhead projector, fs projector (bulb broken), tape recorder and listening center (broken).

Behaviors reported by frequency (10:30-11:00): S_1 (1), S_2 (1), T_1 (2), T_2 (2), R_2 (1), A_2 (1), Q_1 (2), Q_2 (1).

Notes: I replaced fs bulb which had been broken for 3 weeks. Renee approached, inserted and viewed DISTAR based filmstrip which teacher had made. She read words aloud while viewing.

Observation (2): 5-16, 10:03-11:00

Reading groups in session; students have dittoed work packets. 12 students. Media in evidence: language master, EFI card reader, overhead projector, fs projector, tape recorder and listening center.

Behavior recorded by frequenc.: S_1 (7), S_2 (5), T_1 (2), T_2 (1), R_2 (3), A_1 (1), Q_2 (3).

Notes: 2 students fighting over use of card reader, T supervision.

Observation (3): 5-17, 9:40-11:00

Reading groups in session; students have dittoed work packets. 15 students. Media in evidence: language master, EFI card reader, overhead projector, fs projector, tape recorder and listening set.

Behaviors recorded by frequency: S_1 (14), S_2 (5), T_1 (3), T_2 (1), A_2 (6), A_3 (1), Q_1 (1).

Notes: Each child has card for language master: he comes to desk, asks for his card, then records what he wishes. Considerable interplay between students as they share content of cards. T report: formal instruction/ content with language master unsuccessful; children prefer recording their own voices and content.

Observation (4): 5-24, 9:30-10:30

Students working at desks, dittoed work packets. 12 students. Media in evidence: language master, EFI card reader, overhead projector, fs projector, tape recorder and listening set.

Behaviors recorded by frequency: 0, no media use.

Notes: Children have free time - they're finishing or correcting dittoed exercise papers. Those who've finished may play, use media, etc; dominoes and puzzles favored. T report: students' choices of free time activity tend to cluster -- one day, dominoes; another day, tapes or language master.

School (B), Teacher (L)

Observation (1): 4-8, 9:30-11:05

Reading groups in process; students have assigned writing exercises (from board) and work packets. 14 students. Media in evidence: phonograph (covered).

Behaviors recorded by frequency: 0, no media use.

Observation (2): 4-10, 9:55-11:00

Reading groups, assigned work. Aide present; 12 students. Media in evidence: phonograph, tape recorder.

Behavior recorded by frequency: S_1 (4), S_2 (6), T_1 (3), T_2 (6), R_1 (2), A_2 (1), A_3 (1), Q_2 (1).

Notes: Nearly all media use by students supervised by aide.

Observation (3): 5-29, 9:55-10:45

Reading groups in session; students have desk work. 15 students. Media in evidence: phonograph (covered).

Behaviors recorded by frequency: Mostly 0, S_2 (1), R_1 (1).

School (B), Teacher (M)

Observation (1): 5-23, 9:40-11:05

Reading groups, then all-class language. 11 students. Media in evidence: phonograph, tape recorder, card reader (covered).

Behaviors recorded by frequency: S_1 (5), S_2 (2), R_2(1), A_2 (1).

Notes: T report: children like to use equipment, but T hadn't found way of utilizing media as substitute for teacher. When formal instruction via media was tried (EFI reader introduced, cards prepared) children wouldn't use reader witout T supervision. Tape recorder: children record music from phonograph, then listen to tape. T thinks playing good in general sense, but not substitute for lessons.

Manipulation of frequency tallies to determine a ratio of teaching behaviors accepting or rejecting of students' use of individualized media resources, analogous to the OSTRAQ ratio, has not been followed; rather, the frequencies have been kept separate and interpreted as such, the observer drawing as well on contextual impressions.

The results suggest contrasting patterns of teacher-pupil interaction involving use of media in the classes observed. In one (A:K), use of media is encouraged, and students are quite apt to approach devices and use them on their own without teacher supervision. Furthermore, individualized media resources are very much a part of the class environment, set up on tables around the room and ready for use. In class B:L, student use of media was found to be infrequent. Media devices are generally covered or shelved. During observation, several student approaches to equipment were discouraged with either reprimand or rejection of a request to play with/use the tapes, or whatever.

Use made of the individualized media resources varied. One teacher reported that attempts at formal instruction using the EFI card reader had not been successful. More than one hundred cards had been prepared for instruction in reading and arithmetic, but children did

not use the reader without supervision. The teacher preferred to teach directly, rather than supervise a student's use of a device, and so the card reader was shelved. In class A:K, instructional cards had been prepared for a similar device, the Bell & Howell language master and, according to teacher report, had also proved unsuccessful. Subsequently, the teacher had given each child his own card to record content as he wished. The language master became a popular free time activity, students recording and sharing messages. The teacher felt that unstructured use of the language master had value as practice of verbal behavior. In class B:L, use of tapes was supervised and coordinated with reading lessons; in class B:M, children were free to play with the tape recorder, recording and listening to music.

In class A:K, use of individualized resources was observed to be relatively frequent and accepted; however, such use was not encouraged in either the same manner or to the same extent as more conventional forms of student work. Generally, students had dittoed work packets, which exercises they were expected to complete between periods of small group instruction. The students received verbal praise and encouragement for working quietly and well, and such praise was apt to take the concrete form of candies. At the end of the work period, they were given candies for completion of the written exercises. No candies (and rarely, verbal praise) were distributed for media use, however. Teacher behavior, though accepting of individualized media resources as part of the instructional environment, was not directly rewarding of student use of such resources. That the devices are used is apparently because children find some pleasure or interest in them.

Although different patterns of teacher-pupil interaction involving individualized media resources were noted, such patterns are not -- and should not be interpreted as being -- indicative of teaching effectiveness. In one class, individualized media resources have been incorporated into the learning environment; children use them freely, sometimes with instructional content; often for playful manipulation. In a second class observed, media resources are reserved for occasional and supervised use. Whether such differences directly affect learning, however, has not been determined.

Discussion

For the limited purposes of the study, the instrument was effective: the observer was able to specify student and teacher behaviors involving use of individualized media resources and code them; and several patterns of pupil-teacher interactions were identified. The instrument is relatively simple to use (though somewhat dependent on how much of the specified activity is going on during a given session), and the frequency scores are useful for limited interpretation. Although it is possible to compute a ratio with the scores, a proportion of positive teacher behaviors supporting student use of media to teacher-supervising use and rejecting behaviors $\left(\frac{\Sigma S+A+Q}{\Sigma T+R}\right)$, this was not done, the observer questioning the significance of such a statistic. It is possible, of course, to make the instrument more complex -- multifactor analysis with distinctions made for verbal and nonverbal behaviors, identification of media, and kinds of use -- or even to adapt a more complex system such as MACI to the investigation. Such effort would help to make more

precise the identification of interaction behaviors, though whether such precision would make data more significant for the stated purpose of the study is debatable.

The study was conducted on a base of participant observation data, and the question arises of whether structured observation of prespecified variables is very different from or superior to participant observation, especially when a summary statistic of behaviors observed is not computed. The system used, focused as it is on behavior involving media use, shares with participant observation the problems of being both time-consuming and tedious, especially when few behaviors involving media use take place. By coding only prespecified behaviors, interaction analysis is limited to the items of the instrument, and behaviors relevant but without item-identification may be missed. There is one advantage over participant observation, however. Participant observation as a technique has its own selective bias: an observer may note and remember dramatic behavior. It was reported in the XC reports, for example, that teachers seemed threatened by potential challenge to control posed by media, refusing to relinquish control of equipment or media to a child. An example of such behavior is cited, yet there is no way to tell from the reports whether such behavior on the part of a teacher is really a general and consistent pattern with all forms of equipment and all children or specific to situation. Interaction analysis supplies a means for determining whether identified behaviors are special-case incidents or continuing and consistent patterns. For interpreting classroom behavior, a structured system with frequency counts may be ideally suited as complement to participant observation. The combination has worked well in this study.

References

Bogdan, R., Brogden, N., Dodge, M., Lewis, R., Participant Observation Reports, XC, 1972-73. Syracuse: Computer Based Project, 1973.

1. "The Real World: Experimental Classrooms and the Computer Based Project"

2. "The Use of Media in the Classrooms, Part I"

3. "How Teachers Perceive Media"

4. "Participant Observation - A Promising Approach for Educational Technology"

5. "The Use of Media in the Classrooms, Part II"

6. "The Research Organization as Change Agency"

Charles, C.M. "How to Analyze Verbal Interaction" in Educational Psychology: The Instructional Endeavor. St. Louis, C.V.Mosby Co., 1972, pp.137-51.

Computer Based Project. Continuation Proposal, 1972-73. Syracuse: Computer Based Project, 1972.

Medley, D., and Mitzel. "Measuring Classroom Behavior by Systematic Observation" in Handbook of Research on Teaching edited by N. Gage. Chicago, Rand McNally & Co., 1963, pp. 247-328.

Mirrors for Behavior: An Anthology of Classroom Observation Instruments edited by A.Simon and E. Boyer. Philadelphia: Research for Better Schools, Inc., 1967.

Rosenshine, B. "Evaluation of Classroom Instruction." Review of Educational Research, 40:2 (1970) pp. 279-300.

Rosenshine, B., and Furst, N. "The Use of Direct Observation to Study Teaching" in Second Handbook of Research on Teaching edited by R. Travers. Chicago: Rand McNally & Co., 1973, pp. 122-83.